

Exotic hadrons in $\Lambda_b \rightarrow J/\Psi \phi \Lambda$ decay

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We study the weak decay of the Λ_b baryon into $J/\psi \phi \Lambda$ and the possibility of formation of exotic hadrons via final state interaction in all three final two-body channels.

In the $J/\psi \phi$ invariant mass spectrum we study the interplay between the $X(4140)$ and the $X(4160)$ resonances. Particularly for the $X(4160)$ resonance we use a theoretical model which dynamically generates it in chiral unitarity approach [Molina, Oset, PRD80, 114013 (2009)].

The $J/\psi \Lambda$ mass spectrum may help to identify the strange ($S = -1$) partner of the hidden-charm pentaquark recently observed by the LHCb collaboration, the existence of which has been predicted by a chiral unitary approach. We conclude that this strange pentaquark has a good chance of experimental detection if it is present in the range between 4450 – 4500 MeV.

In the $\phi \Lambda$ spectrum there is a contribution from a dynamically generated resonance at around 2160 MeV [Oset, Ramos, EPJA44, 445 (2010)], but with the present model parameters we see a rather little chance for its experimental detection.

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